

**ON-SITE E-COMMERCE PARTS
ORDERING FROM PRODUCTS BEING SERVICED**

Background of the Invention

The present invention relates to parts ordering systems. It finds particular application in conjunction with on-site parts ordering systems within an e-commerce environment and will be described with particular reference thereto. It will be appreciated, however, that the invention is also amenable to other like applications.

Large items (e.g., industrial products and/or machinery) are typically serviced on-site (i.e., in the field). During a service call, service technicians frequently discover that the products being serviced require replacement components. Conventionally, service personnel determine replacement components requirements according to service documentation repair procedures. The required part numbers are accessed from a parts list section included within the documentation. In some instances, when a machine's configuration has been altered due, for example, to retrofits, service personnel must determine which one of several similar, but functionally different, components are required. Typically, this involves reviewing change-tag information, which is included on a printed medium within the machine (e.g., attached as a label on an inner door panel). When a retrofit or configuration change is involved, the change-tag information label is manually scored once the parts are installed in order to keep track of the updated module hardware configuration.

Once the most current part number is identified, the parts order is transmitted (e.g., via telephone) to a distribution center. More specifically, the order is

first transmitted to a local parts distribution center. If the part is not available locally, the order is forwarded to a regional distribution center. If the part is not available regionally, the order is then forwarded to a national distribution center. If the national distribution center does not have the part in stock, the part is retrieved from a manufacturing line. Once the part is found, the part is forwarded to the field for installation in the machine.

Traditionally, the service documentation repair procedures have been embodied in printed form (e.g., in a repair manual). Repair manuals, which include exploded views of each component and sub-component within a machine, are often times at least several inches thick. Determining a correct part number for a component to be replaced requires reviewing the exploded views within the repair manual to identify the component itself or a sub-assembly that includes the component. Next, the change-tag information is consulted for determining if the identified part number has become obsolete (e.g., the vendor supplying the part has changed) because a materials change was made (e.g., if the useful life of the part was not as long as expected), the vendor supplying the part changed, or the technology has been updated so that a different part is now being used. In some cases, one change precipitates another.

As one can easily imagine, the process described above may be time consuming while the potential for human-error is great. For example, it is not unforeseeable that the wrong part number is inadvertently identified by the technician within the exploded view of the machine. Furthermore, such a mistake may not be discovered until the part arrives at the site of the machine. In that case, the ordering process would need to begin again. Consequently, the down-time of the machine may be doubled. Additionally, the cost, in terms of both money and time, for maintaining the documentation, including the change-tag information, is substantial.

The present invention provides a new and improved apparatus and method which overcomes the above-referenced problems and others.

Summary of the Invention

A method for ordering parts for a machine being serviced within an e-commerce environment transmits diagnostic data from a local computing device at the machine to a host computing device via a network. A part to be replaced within
5 the machine is identified as a function of the diagnostic data. A part identifier is determined as a function of the part and retrofit information stored on the host computing device. The part identifier is transmitted from the host computing device to an order processing device.

In accordance with one aspect of the invention, if the part is included as
10 a non-replaceable component in a replaceable sub-assembly within the machine, the identifying step includes identifying the part as the sub-assembly. If the part is a replaceable component within the machine, the identifying step includes identifying the part as the component.

In accordance with another aspect of the invention, other parts within
15 the machine to be replaced are determined as a function of the part identifier.

In accordance with another aspect of the invention, an identifier of the machine is transmitted from the local computing device to a host computing device via the network. The part identifier and the retrofit information is identified as a function of the machine identifier.

20 In accordance with another aspect of the invention, the local computing device is a discrete unit from the machine. The local computing device is connected to the machine via a communication link.

In accordance with another aspect of the invention, the diagnostic data is stored within the local computing device.

25 In accordance with another aspect of the invention, a confirmation is transmitted to the local computing device that the part identifier has been transmitted to the order processing device.

In accordance with another aspect of the invention, the part is identified by viewing a graphical representation of the machine via a display device. The graphical representation is zoom-in via a pointing device.

One advantage of the present invention is that it increases the accuracy
5 of the ordering process.

Another advantage of the present invention is that it increases the speed with which a part may be ordered.

Still further advantages of the present invention will become apparent to those of ordinary skill in the art upon reading and understanding the following
10 detailed description of the preferred embodiments.

Brief Description of the Drawings

The invention may take form in various components and arrangements of components, and in various steps and arrangements of steps. The drawings are only for purposes of illustrating a preferred embodiment and are not to be construed as
15 limiting the invention.

FIGURE 1 illustrates a system according to the present invention; and

FIGURE 2 illustrates a flowchart of the method according to the present invention.

Detailed Description of the Preferred Embodiments

With reference to FIGURES 1 and 2, a method **1000** to order parts for a
20 machine **10** being serviced within an e-commerce environment begins in a step **1010**. In the preferred embodiment, the machine **10** is a large-scale product used in a business environment. For example, it is contemplated that the machine **10** be a large-scale printer, copier, or other machine used in an office or an industrial environment.
25 A local processing device **12** (e.g., a PC) is connected to the machine **10**, in a step **1012**, via a communication link **14**. Although the local processing device **12** is

described in the preferred embodiment as a discrete unit, it is also contemplated that the local processing device 12 be integrated into the machine 10.

Data used for diagnosing malfunctions in the operation of the machine 10 is gathered by the local processing device 12 in a step 1014. Optionally, the 5 diagnostic data is stored, in a step 1016, in a memory device 16 that communicates with the local computing device 12. A machine identifier (e.g., a serial number) is determined within the local processing device 12. In the preferred embodiment, a user enters the serial number into the local processing device 12. Alternatively, it is contemplated that the serial number is "hard-wired" into the machine 10. In this case, 10 the local processing device 12 reads the serial number from the machine 10. The local processing device 12 transmits the serial number and the diagnostic data to a host computing device 20 (central processing unit), in the step 1020, via a network 22 (e.g., an internet or intranet).

The diagnostic data is processed by the host computing device 20 in a 15 step 1022. More specifically, the host computing device 20 runs tests using the diagnostic data to determine if any of the parts in the machine 10 are not functioning as expected. Alternatively, the user inspects the parts of the machine to identify parts that are in need of replacement.

Once a part 24 to be replaced is determined, an identifier of the part is 20 determined. In the preferred embodiment, the part 24 is identified by viewing a graphical representation of the machine 10 on a display device 30 (e.g., a monitor). Then, via a pointing device 32 (e.g., a mouse), the user points to an area on the monitor 30 displaying a section of the machine 10 including the part 24. Once the pointing device 32 is positioned over the appropriate section of the machine 10, the 25 user magnifies (zooms-in) that portion of the machine 10 by, for example, clicking a button on the mouse 32. The user repeats this process until the part 24 is magnified to a predetermined threshold level for showing a predetermined level of detail.

Once the part 24 is magnified to a predetermined level on the display device 30, the user selects, in a step 1024, the part 24 with the pointing device 32 (e.g.,

places a cursor over the part **24** using the pointing device **32** and then selects the part **24** by pressing a button on the pointing device **32**). Once the part **24** is selected in the step **1024**, a part identifier (e.g., part number) is determined in a step **1030**. The part identifier is included within the data for the graphical representation of the machine
5 **10**. In the preferred embodiment, the data for the graphical representation of the machine **10**, along with the data for the part identifiers, are stored locally in the memory device **16**. However, it is also contemplated that the data be stored remotely in the host computing device **20**. The identifier of the part **24** to be replaced is transmitted from the local processing device **12** to the host computing device **20** in a
10 step **1032**.

Retrofit information for each of the parts is maintained on a storage device **34**, which communicates with the host computing device **20**, as a function of the machine identifier. The retrofit information represents change-tag information (updated information) for determining if the part identifier determined in the step **1030**
15 has become obsolete (e.g., the vendor supplying the part has changed and/or the technology has been updated so that a different part is now being used). The part identifier is updated, in a step **1034**, as a function of the retrofit information. More specifically, a processing device **38**, which communicates with the host computing device **20**, determines whether any updated information is available for the part
20 identifier. In other words, the part identifier determined in the step **1030** may or may not be replaced, in the step **1034**, with an updated part identifier. The part identifier (i.e., updated part identifier) is then transmitted, in a step **1038**, from the host computing device **20** to an order processing device **40**. The order processing device **40** may be located at a local parts distribution center. If the part corresponding to the
25 part identifier is available at the distribution center, the part is shipped to the location of the machine **10**. Otherwise, the order is automatically forwarded to a regional and/or national distribution center.

Optionally, a confirmation that the part identifier has been sent to the order processing device 40 is transmitted to the local computing device 12 in a step **1040**.

The process **1000** stops in a step **1042**.

It is to be understood that the change-tag information maintained on the host computing device 20 also identifies other parts that are to be replaced along with the part 24. In other words, replacing one part in the machine 10 may precipitate changing another part. Any additional parts to be replaced are identified, in the step **1034**, within the retrofit information as a function of the part 24 to be replaced.

The part 24 identified in the step **1024** may be a replaceable component within the machine 10. For example, the part may be a piece that is capable of being removed from the machine 10 and/or replaced as a discrete element. In this case, the part identifier represents the component to be replaced. Alternatively, the part 24 may be included as a non-replaceable component within a replaceable sub-assembly. In other words, the part 24 cannot be removed and/or replaced within the machine 10 without removing and/or replacing an entire sub-assembly. In this case, the part identifier represents the entire sub-assembly including the part 24 to be replaced.

The invention has been described with reference to the preferred embodiment. Obviously, modifications and alterations will occur to others upon reading and understanding the preceding detailed description. It is intended that the invention be construed as including all such modifications and alterations insofar as they come within the scope of the appended claims or the equivalents thereof.